Organizational characteristics influence implementation of worksite health protection and promotion programs: Evidence from smaller businesses

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Abstract

Objective—We explored associations between organizational factors (size, sector, leadership support, and organizational capacity) and implementation of Occupational Safety and Health (OSH) and Worksite Health Promotion (WHP) programs in smaller businesses.

Methods—We conducted a web-based survey of Human Resource Managers of 117 smaller businesses (<750 employees) and analyzed factors associated with implementation of OSH and WHP among these sites using multivariate analyses.

Results—Implementation of OSH but not WHP activities were related to industry sector (p= 0.003). Leadership support was positively associated with OSH activities (p<.001), but negatively associated with WHP implementation. Organizational capacity (budgets, staffing, and committee involvement) was associated with implementation of both OSH and WHP. Size was related to neither.

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Conclusions—Leadership support and specifically allocated resources reflecting that support are important factors for implementing OSH and WHP in smaller organizations.

Keywords

worksite health protection and promotion programs; worksite wellness; small business; implementation

Background/Objectives

Worksites are important venues for protecting and promoting worker health, safety, and well-being, (1) and employers are increasingly interested in preventing or reducing conditions such as chronic diseases, musculoskeletal injuries, sleep disorders, and stress among their employees. (2) Employer support for engaging in these health protection and promotion activities may arise from a combination of legal, financial, and ethical considerations. Most private worksites have legal responsibilities to meet minimal occupational safety and health (OSH) standards to protect worker health and safety, (3) and such efforts have been found to reduce work-related hazardous exposures and illnesses. (4, 5) While not mandated by the government, an increasing number of employers are now offering worksite health promotion (WHP) programs in order to protect and promote worker health, reduce health-related costs, (6–9) and perhaps to improve worker health, well-being and productivity. (7, 10–12)

There is a growing literature demonstrating associations between structural and functional factors of organizations with their willingness or readiness to adopt and implement a variety of innovations, including some studies that have specifically examined implementation of OSH and WHP innovations. (13–18) Results from these studies suggest that organizational factors such as company size, industrial sector, existence of top leadership support for OSH or WHP programs, and organizational capacity, in terms of dedicated staff, budgets, and committees to implement OSH and WHP are of potential importance. (19–22)

Compared to larger businesses, smaller employers offer fewer WHP programs, policies, and services (19, 20, 22) and fewer OSH activities. (21, 22) Differences in implementation of OSH and WHP exist nationally by industrial sector, with blue-collar sectors, such as manufacturing, reporting higher numbers of OSH and WHP activities than other sectors, such as retail. (19, 21) Differences in implementation of OSH and WHP by sector have also been found in a sample of multiple-sized Massachusetts companies. (22)

Company leaders often hold the key to providing the direction and resources to support program implementation, and their support has been found to be a key facilitator for both OSH and WHP programs; (23, 24) however, few investigations have examined the consequences of differences in leadership support in relationship to levels of implementation of WHP and OSH. Having organizational capacity has been positively associated with implementation of WHP. (19, 20) While literature in OSH has not specifically associated organizational capacity with implementation, recent calls have been made by researchers to investigate further the relationships between organizational capacity, resources, and implementation of OSH among smaller businesses. (21)

Most of the research examining relationships between organizational factors and implementation of OSH and WHP activities focuses on larger organizations. Since most employees work in smaller organizations that generally have fewer resources, it is important to understand these relationships in small- to medium-sized enterprises. (25) Definitions of smaller organizations may range widely in the U.S. For example, the U.S. Small Business Administration defines small businesses as having less than 1,000 employees depending on industry; (26) the U.S. Census Bureau defines them as having less than 500 employees; (27) and the federal health insurance system defines a small business as having less than 50 employees. (28) Definitions of medium-sized businesses also vary in the U.S. with national surveys using between 250 and 4,999 employees. (19–21, 29) In this study, and based on the U.S. Small Business Administration definition, (26) we choose to define small- to medium-sized enterprises as having less than 750 employees, and call small- to medium-sized enterprises "smaller organizations."

Most of the extant research on organizational factors and implementation focuses on either OSH or WHP; there is a dearth of information on implementation of both. While a recent study in Massachusetts investigated relationships of size and sector with implementation of OSH and WHP, (22) the study did not report associations with top leadership support or organizational capacity, and the generalizability of these findings beyond the Massachusetts sample is unknown. It is also unclear whether having high numbers of OSH activities is related to having high numbers of WHP activities in smaller businesses, although Tremblay and colleagues found this relationship in a study of multiple-sized, including larger, organizations. (22)

In order to respond to the call from the National Institute for Occupational Safety and Health (NIOSH) to increase the integration of OSH and WHP through its Total Worker Health™ initiative, (30) a greater understanding of the relationships between organizational characteristics and implementation of OSH and WHP, particularly among smaller businesses, is needed. This paper investigates relationships between organizational characteristics (i.e., size, sector, leadership support and capacity) and the extent of implementation of OSH and WHP activities in 117 smaller businesses in Upper Mid-Western states. We also examine whether high numbers of OSH activities are correlated with high numbers of WHP activities in smaller enterprises.

Methods

Study Design, Sample, and Procedures

This cross-sectional observational study is part of a larger study aimed at understanding the needs, interests, and practices of smaller organizations in relation to adoption and implementation of OSH and WHP programs. We obtained two lists of human resource directors/managers from a state Chamber of Commerce and from an insurance brokerage firm based in Minnesota to identify potential participants. The lists contained contact information for all companies in the respective organization's databases that reported having fewer than 750 employees. Our research team distributed brief web-based surveys to Human Resource directors/managers of 400 of those enterprises. Respondents were offered a $25 gift card as an incentive to complete the survey. Up to three reminder emails were sent to

non-respondents. Beyond these three reminder emails, a maximum of three additional attempts were made to reach each non-respondent by phone, after which a message was left to inform them that a copy of the survey would be sent via mail. For those non-respondents for whom we did not have a phone number, a copy of the survey was sent by mail.

Study Measures

Measures were adapted from previously validated or administered surveys of OSH and WHP. (20, 31, 32) The complete survey is available from the authors upon request.

Implementation of OSH and WHP activities—Table 1 presents the questions used to measure implementation of OSH and WHP program and policy activities, our primary outcomes. The questions to assess the number of OSH activities were based on a survey previously used by the research team (31) that is based on the Occupational Safety and Health Administration's (OSHA) 1995 Occupational Safety and Health Program Evaluation Profile. The extent of implementation of OSH programs and policies refers to the number of "yes" responses to 10 questions. Response options were dichotomous (y=1, n=0), and could range from 0–10. Questions to assess the number of WHP activities were adapted from the National Worksite Health Promotion Survey (20) and the Massachusetts Worksite Health Improvement Survey. (32) The extent of implementation of WHP programs and policies refers to the number of "yes" responses to 19 questions. Response options were dichotomous (y=1, n=0), and could range from 0–19.

We considered four organizational characteristics: size, sector, leadership support, and capacity.

Size and industrial sector—Size was defined as the number of employees in each company. Industrial sector was determined by using the North American Industrial Classification System. (33)

Leadership support—Leadership support measures for OSH and WHP were adapted from Cinite et. al; (34) separate questions inquired whether there was a person in top leadership who was a strong supporter of 1) OSH and 2) WHP. Response options were dichotomous (y=1, n=0).

Capacity—Based on Hannon and colleagues' measure for WHP capacity, (19) we included three items assessing whether the respondents' companies had dedicated budgets, staff, and worksite committees for WHP. Each of these three items' response options was either yes or no (y=1, n=0). We asked similar questions for OSH that had similar response options. We estimated each individual capacity item separately. Following Hannon and colleagues, (19) we combined each of the three individual items to develop a WHP capacity score (possible range of 0–3). We used the same process to develop an OSH capacity score (possible range of 0–3). We estimated means of OSH and WHP implementation activities stratified by each individual capacity factor. If a factor is present, then mean implementation of both OSH and WHP are higher than if the factor is not present. But if present, the three factors are similar in terms of mean implementation for both OSH and WHP strategies.

Variables used in analyses: size, sector, levels of implementation of OSH and WHP activities—We initially explored the relationships of numbers of OSH and WHP activities to company size using the median, mean and quartiles; we also used size as a continuous variable. None showed significantly different results. We subsequently divided the company size variable at the median into < 112 employees and 112 employees.

Based on the survey respondents' reported industrial sector we utilized a crosswalk that collapses specific U.S. Census Industry Codes into the four broad sectors (white collar, service, blue-collar and farm) used by the National Center for Health Statistics. (35, 36) For bivariate analyses, the level of implementation of OSH activities was divided into lower levels (having 0–8 OSH programs and policies) and higher levels (having 9–10 OSH programs and policies), with the cut points at the mean number of OSH programs and policies. Similarly, level of implementation of WHP activities was divided at the mean into lower levels (having 0–9 OSH programs and policies) and higher levels (having 10–19 WHP programs and policies). For the two-way analyses of variance (ANOVA), we used the implementation of OSH and WHP variables as continuous (described above under the section "*Implementation of OSH and WHP activities).*"

Data analyses

Descriptives, bivariates, and correlations—We conducted descriptive analyses for continuous variables, expressed as means, plus or minus the standard error of the means, and for categorical variables, represented as frequency and percent of the sample.

We examined the main outcomes of employer OSH and WHP implementation, stratified by size, sector, presence of top leadership support, and capacity. For categorical data, we conducted chi-square analyses to compare groups, and used t-tests for continuous data. We used a Levene's test of homogeneity (37) to determine whether the variance was equal for each variable. Statistical tests indicating that findings had less than a 5 percent probability of being due to chance were considered statistically significant. We used Pearson product-moment correlation to examine the relationship between number of OSH and WHP activities in companies.

Multivariate analyses—We used the bivariate analyses to determine organizational factors that were statistically significant for both OSH and WHP implementation to incorporate into the final models in the multivariate analyses. We conducted a two-way analysis of variance (ANOVA) to determine whether significant differences existed for either main effect of number of capacity factors (range of 0–3) or existence of leadership support (0,1) for implementation of OSH and WHP, while adjusting for the other significant factor. After running the model, if either of the main effects (i.e. leadership support or capacity) was significant, we used a Tukey post hoc test to identify specific differences. All statistical analyses performed used SAS v9.3 (SAS Institute Inc., Cary, NC) and SPSS v21 (IBM Corp, Armonk, NY).

Results

Out of 400 web-based surveys distributed to companies in the Upper Mid-West, 117 organizations responded, yielding a response rate of 29%. With information available on size and sector from the lists of companies used in this study, we examined differences between respondents and non-respondents. Compared to the 283 non-responding companies, survey respondents were significantly more likely than non-respondents to be from smaller companies (<112 employees) (p=0.022, data not shown). No statistically significant differences existed in response by industrial sector (i.e. white-collar, service, and blue-collar and farm) between respondents and non-respondents (p=0.179, data not shown).

Organizational characteristics

Size and sector—Companies employed between seven and 735 people, with a median of 112 employees. As indicated in Table 2, over half (53%) of respondents reported they were from companies with NAICS codes in the white-collar sector, about 18% were from the service sector, and about 29% were from the blue-collar and farming sectors.

Organizational supports—top leadership support and OSH and WHP capacity—Organizational supports for OSH and WHP include top leadership support and capacity (defined as having a dedicated budget, staff, committee for OSH/WHP). As indicated in Table 2, companies reported a higher proportion of top leadership support and capacity for OSH, as compared to WHP. For instance, about 80% of respondents reported top leadership support for OSH at their companies, while about 64% responded that top leaders supported WHP. For both OSH and WHP, responding employers were more likely to report they had dedicated staff and a worksite committee than to have a specific budget for OSH or WHP. Less than a quarter of companies reported that they had all three capacities for OSH (22.2%) or WHP (15.4%).

OSH and WHP policies and programs

All companies reported that they had at least one OSH or WHP activity; the number of OSH activities ranged from 1–10 and WHP activities, from 3–19. Table 3 indicates that over 75 % of companies reported having at least 8 OSH policies, training efforts, and programs. Slightly fewer respondents reported updating the OSH program policy regularly. About two-thirds said that management regularly sets safety goals.

The most reported WHP activities included having a written policy banning drug and alcohol use while on the job, having an Employee Assistance Program, and having a vending machine for food/beverages. In contrast, less than half of respondents reported that their companies provide health promotion activities requiring resources such as fitness discounts, educational programs, or have onsite shower facilities. Less than a third of companies reported conducting health risk appraisals or health screenings, providing individual health coaching, or having health promoting environmental supports such as promotions or discounts for healthy foods.

Organizational characteristics and implementation levels of OSH and WHP

As indicated in Table 4, different sectors had significantly different levels of OSH implementation (p=.003), with the blue-collar and farming sector having higher levels of OSH implementation compared to both the white collar and service sectors. Company size was not significantly related to the extent of implementation of either OSH or WHP.

Top leadership support and capacity (i.e. dedicated staff, committee, and budget) were the organizational characteristics most strongly associated with the levels of OSH and WHP implementation. For OSH, top leadership support and capacity were significantly related to having higher levels of implementation of OSH activities (p<0.001). While capacity for WHP was also significantly related to higher levels of implementation of WHP activities (p<0.001), top leadership support was associated with lower levels of WHP implementation (p=.008).

Correlation between number of OSH and WHP activities

A Pearson product-moment correlation coefficient was computed to assess the relationship between OSH and WHP activities. There was no significant correlation (r=0.15, p=0.103) between the numbers of OSH and the numbers of WHP activities (data not shown).

Relationships of capacity and leadership support to implementation of OSH and WHP activities

In bivariate analyses, only leadership support and capacity were significantly related to implementation of both OSH and WHP activities. Hence, these were the two sole organizational characteristics investigated in analyses of variance (ANOVA).

As indicated in Table 5, having top OSH leadership support (p = 0.001) and higher numbers of OSH capacity factors (p <0.001) are both individually associated with employer implementation of OSH. In the last column in Table 5, we see that leadership support explains 8.8% of the variance found in OSH implementation and OSH capacity (OSH committee, dedicated staff, budget) accounts for 30.2% of the variance.

For WHP, only capacity was significantly associated with WHP implementation; having higher numbers of WHP capacity factors was significantly associated with implementing higher numbers of WHP activities (p<0.001). Table 5 indicates that approximately 31% of the variance in WHP implementation is accounted for by WHP capacity, suggesting having a dedicated staff person, WHP committee and/or budget plays a larger role in implementing WHP than having top leadership support.

Discussion

Various organizations have highlighted the importance of understanding the practices and needs of smaller organizations in relation to their adoption and implementation of OSH and WHP, (38–40) and there have been recent calls for leaders of smaller organizations to become more involved in worksite health promotion and protection. (24, 41) This study contributes knowledge about implementation of OSH and WHP activities in smaller organizations in the Upper Mid West, as well as how organizational factors, including

leadership support and capacity, may be related to this implementation. Nearly all respondents reported some level of activity in both OSH (99%) and WHP (98%), and the overall proportion of measured OSH activities implemented was higher than that of WHP. We found that size was not significantly related to implementation of OSH or WHP; industrial sector was associated with implementation levels of OSH, but not WHP. We did not find a strong correlation between implementation of OSH and WHP activities. To our knowledge, this is the first study that investigates capacity, in terms of dedicated budgets, staff, and committees, across OSH and WHP in the same group of smaller organizations. We found that top leadership support was important to implementation of OSH but having accompanying resources, in terms of dedicated budgets, staff, and committees for OSH and WHP, were even more strongly related to implementation, especially for WHP.

Because regulations exist for OSH activities, it is not surprising that nearly three-quarters of respondents said they conducted nine of the 10 potential OSH activities. That suggests, however, that nearly one-quarter are either non-compliant with OSH best-practices or are either at low-risk or too small for the regulations to apply. While not mandated, national programs and policies encourage implementation of WHP among smaller organizations, including "WorkHealth"® (38) from the Centers for Disease Control and the Prevention and the Affordable Care Act. (25) There were relatively high levels of implementation of WHP (over 65%), especially related to activities that were no- or low-cost (e.g. written drug, tobacco, alcohol, and firearm policies). Activities that required organizations to expend more financial resources (e.g., health risk assessments or health coaching) showed lower rates of implementation (less than 32%). A study in Massachusetts reported comparable findings related to the implementation of OSH and WHP activities. (22) These levels of worksite implementation of OSH and WHP leave room for improvement in how employers are promoting and protecting worker health in smaller organizations. Following OSH best practices and being in compliance with OSHA mandates should be the priority for all organizations.

Others have noted the importance of capacity (dedicated staff, committees, and budgets) for implementation of OSH or WHP. (19–21) As the first study that investigates these factors across OSH and WHP in the same groups of smaller organizations, we found that only 22% of the companies reported full capacity (in terms of having staff, a budget, and a committee) for OSH, and only 15%, for WHP.

Size was not significantly related to implementation of OSH or WHP activities. This finding contrasts with other studies' findings that implementation levels of both OSH and WHP increase with increasing size. (20–22, 25) Apart from the study conducted by Sinclair and Cunningham, the referenced studies did not limit the size of the organization. We limited our sample to companies employing 750 employees or less; it may be that size matters most when the size range is larger than that included in this study. Noting the inconsistency of our results with the literature, we conducted multiple tests using different size categories, including tertiles and quartiles, and also using the mean of size and size as a continuous variable. We also tested different levels of implementation to see if that would provide different conclusions. Following Tremblay and colleagues, (22) we divided WHP activities into those that were reflective of policy only, and those WHP activities that were reflective

of programs and environmental supports. We then tested whether size might be significantly associated with these two groups of WHP activities. Finally, we tested different multivariate techniques including linear and logistic regression; the results were not significantly different from the bi-variate and ANOVA results. Throughout all these tests, size was not significantly associated with implementation of OSH or WHP. We thoroughly explored the relationship between company size and our outcomes and feel confident that the median split that we used for size offers concise presentation of the variable, while remaining consistent in how it relates to our chosen outcome variables as well. It may be that different sized smaller organizations are more homogenous in what they implement than the larger organizations included in literature.

We found that industrial sector was significantly associated with implementation levels of OSH, but not WHP. In particular, companies from the blue-collar sector had significantly higher levels of OSH compared to companies from either the white collar or service sectors. This may not be surprising as the impetus for OSHA regulations came out of the manufacturing environment. The lack of statistical association between sector and implementation levels of WHP is interesting and deserves further study; other investigators have noted differences, though statistical significance was not reported in those studies. (19, 22)

We found an unexpected lack of correlation between OSH and WHP activities. Tremblay and colleagues found a moderate correlation between OSH and WHP activities in a Massachusetts sample, (22) but their study was not limited to smaller organizations which may have impacted results. Our findings seem to suggest that among companies of this size, having stronger OSH programming does not mean necessarily that they will have equally strong WHP activities.

While other studies looked at size and sector in relation to implementation of OSH and WHP, this study also investigated top leadership support and capacity. As expected, leadership support was associated with higher levels of OSH implementation. (23) However, it was associated with lower levels of WHP implementation in the bivariate analyses. This may mean that leadership support, without investing resources into building capacity, is insufficient in and of itself to foster implementation of WHP. This observation is substantiated by the regression analyses results that indicate that capacity, and not leadership support, was significantly associated with higher implementation numbers of WHP activities. Indeed, having capacity in terms of budget, staff, and a committee appears to have the strongest impact on implementation of both OSH and WHP analyses. Top leaders of smaller organizations who support OSH and WHP are encouraged to translate that vision into tangible organizational resources, including budgets, committees, and staff to further the success of implementation efforts.

Although company size and industrial sector are organizational factors that have been found to influence OSH and WHP implementation, (19–22) they are not ones that can be changed easily without significant reorganizations occurring within companies. Leadership support and capacity can be addressed in a company; size and sector are more fixed attributes. Given its particular strength in this study, further investigation of the role of capacity for OSH and

WHP implementation is warranted. Future efforts with a larger sample may be able to discern whether particular components of capacity have stronger influences than others. Additionally, leaders of vanguard companies where capacity is strong for OSH and WHP may be able to influence industry norms and standards by advocating amongst their peers about the importance of both leadership and capacity.

Several limitations of this study should be noted. While the overall response rate of 29% was low, it is typical for web-based self-response surveys. (42) However, responding companies might have been those more likely to have OSH and WHP activities. We assessed representativeness with available data and found that the responding organizations' industrial sectors were similar to non-respondents, but respondents were disproportionally from smaller-sized organizations. The small sample size based in a limited geographical area may have impacted results. This may have been especially true with the lack of association between size of company and levels of implementation of WHP and OSH. All OSH and WHP activities were given an equal weight in analyses, which could be a limitation. We are not aware of a weighting schema for individual OSH and WHP activities, and activities used were from recognized sources. (20, 31, 32, 43) An additional limitation is that no standard measures exist for top leadership support and capacity, (44) though the capacity item we use has been used previously in the WHP literature. (19) Finally, as with all cross-sectional surveys, the associations found do not imply causality.

The study has several strengths. This study contributes to understanding the implementation of both OSH and WHP by focusing on one geographical region in the Upper Mid-West and augments findings from a Massachusetts study investigating relationships between some similar organizational factors and the implementation of WHP and OSH. (22) Since currently there is no national worksite health survey of OSH and WHP implementation, it is important to investigate implementation at state and regional levels to begin to develop an understanding of these issues. The focus on smaller organizations is also novel and important as most employees in the U.S. work in a smaller organization. (27) The companies surveyed came from a wide variety of industrial sectors, and were representative of industry sectors in this geographical region. Finally, this investigation is the first to examine the organizational characteristics of leadership support and capacity and their important relationships to implementation of WHP and OSH in smaller organizations.

Conclusions

Our study contributes important information about factors influencing the implementation of OSH and WHP in smaller organizations based in one geographical region of the U.S. Comparable data across the US would be useful; however, it has been a decade since the last national worksite health survey was conducted. A new national worksite health survey that includes questions about organizational characteristics and factors related to implementation of both OSH and WHP could increase substantially overall knowledge of the situation in smaller organizations. Our results suggest that more investigation of the roles of capacity and leadership support for implementation of OSH and WHP is warranted. Also, assessing the reasons why leaders and managers support OSH and WHP is another area for future study. Smaller organizations' leaders' support may be important but not sufficient without

concomitant organizational resources to increase OSH and WHP implementation, and to protect and promote worker health and safety. Finally, as the NIOSH Total Worker Health™ initiative aims to increase the integration of OSH and WHP, it may consider leadership support and capacity as important indicators of integration and factors amenable to timely organizational change in implementing Total Worker Health™ approaches in smaller organizations.

Acknowledgments

References

1. National Institute for Occupational Safety and Health. Washington, DC: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health; 2012. Research Compendium: The NIOSH Total Worker Health™ Program: Seminal Research Papers 2012.

2. Harris JR, Lichiello PA, Hannon PA. Peer Reviewed: Workplace Health Promotion in Washington State. Preventing chronic disease. 2009; 6

3. U.S. Department of Labor. [Accessed on November 13, 2014] About OSHA. 2014. https://www.osha.gov/about.html.

4. Silverstein M. Getting home safe and sound: occupational safety and health administration at 38. Am J Public Health. 2008; 98:416–423. [PubMed: 18235060]

5. U.S. Congressional Office of Technology Assessment. Washington, DC: U.S. Government Printing Office; 1995. Gauging Control Technology and Regulatory Impacts in Occupational Safety and health--An Appraisal of OSHA's Analytic Approach.

6. Chapman LS. American Journal of Health Promotion I. Meta-evaluation of worksite health promotion economic return studies: 2005 update. American Journal of Health Promotion. 2005; 19:1–11.

7. Goetzel RZ, Ozminkowski RJ. The health and cost benefits of work site health-promotion programs. Annu Rev Public Health. 2008; 29:303–323. [PubMed: 18173386]

8. Newman L, Stinson K, Metcalf D, et al. Implementation of a worksite wellness program targeting small businesses: The Pinnacol Assurance Health Risk Management Study. Journal of Occupational and Environmental Medicine. 2015; 57:14–21. [PubMed: 25563536]

9. Whitehead DA. A corporate perspective on health promotion: Reflections and advice from Chevron. American Journal of Health Promotion. 2001; 15:367–369. [PubMed: 11502023]

10. Anger WK, Elliot DL, Bodner T, et al. Effectiveness of Total Worker Health interventions. Journal of Occupational Health Psychology. 2014 Advance online publication. http://dx.doi.org/10.1037/a0038340.

11. Baicker K, Cutler D, Z S. Workplace wellness programs can generate savings. Health Affairs. 2010; 29:304–311. [PubMed: 20075081]

12. Pronk N. Placing workplace wellness in proper context: Value beyond money. Preventing Chronic Disease. 2014; 11:140128.

13. Becan JE, Knight DK, Flynn PM. Innovation adoption as facilitated by a change-oriented workplace. Journal of substance abuse treatment. 2012; 42:179–190. [PubMed: 22154030]

14. Chaudoir SR, Dugan AG, Barr CH. Measuring factors affecting implementation of health innovations: a systematic review of structural, organizational, provider, patient, and innovation level measures. Implement Sci. 2013; 8:22. [PubMed: 23414420]

15. Chor KHB, Wisdom JP, Olin S-CS, Hoagwood KE, Horwitz SM. Measures for predictors of innovation adoption. Administration and Policy in Mental Health and Mental Health Services Research. 2014:1–29. [PubMed: 24005247]

16. Kramer DM, Bigelow PL, Carlan N, et al. Searching for needles in a haystack: Identifying innovations to prevent MSDs in the construction sector. Applied ergonomics. 2010; 41:577–584. [PubMed: 20170903]

17. Kruse CS, DeShazo J, Kim F, Fulton L. Factors Associated With Adoption of Health Information Technology: A Conceptual Model Based on a Systematic Review. JMIR medical informatics. 2014; 2

18. Weiner BJ, Lewis MA, Linnan LA. Using organization theory to understand the determinants of effective implementation of worksite health promotion programs. Health Education Research. 2009; 24:292–305. [PubMed: 18469319]

19. Hannon PA, Garson G, Harris JR, Hammerback K, Sopher CJ, Clegg-Thorp C. Workplace health promotion implementation, readiness, and capacity among midsize employers in low-wage industries: a national survey. J Occup Environ Med. 2012; 54:1337–1343. [PubMed: 23090160]

20. Linnan L, Bowling M, Childress J, et al. Results of the 2004 National Worksite Health Promotion Survey. Am J Public Health. 2008; 98:1503–1509. [PubMed: 18048790]

21. Sinclair RC, Cunningham TR. Safety activities in small businesses. Safety Science. 2014; 64:32–38. [PubMed: 26339124]

22. Tremblay PA, Nobrega S, Davis L, Erck E, Punnett L. Healthy workplaces? A survey of Massachusetts employers. Am J Health Promot. 2013; 27:390–400. [PubMed: 23470184]

23. Bauman A, Holness DL, Norman P, Idriss-Wheeler D, Boucher P. The Ergonomic Program Implementation Continuum (EPIC): Integration of health and safety - A process evaluation in the healthcare sector. Journal of Safety Research. 2012; 43:205–213. [PubMed: 22974686]

24. Tryon K, Bolnick H, Pomeranz JL, Pronk N, Yach D. Making the workplace a more effective site for prevention of noncommunicable diseases in adults. Journal of Occupational and Environmental Medicine. 2014; 56:1137–1144. [PubMed: 25376407]

25. Harris JR, Hannon PA, Beresford SA, Linnan LA, McLellan DL. Health promotion in smaller workplaces in the United States. Annu Rev Public Health. 2014; 35:327–342. [PubMed: 24387086]

26. U.S. Small Business Administration. [Accessed on May 28, 2015] Table of Small Business Size Standards Matched to North American Industry Classification System Codes. Available at: https://www.sba.gov/sites/default/files/files/Size_Standards_Table.pdf.

27. U.S. Census Bureau. [Accessed on November 21, 2014] Statistics of U.S. Businesses. Available at http://www.census.gov/econ/susb/.

28. U.S. Centers for Medicaid and Medicare Services. [Accessed on April 23, 2015] Healthcare.gov Small Businesses. Available at: https://www.healthcare.gov/small-businesses/.

29. Bondi MA, Harris JR, Atkins D, French ME, Umland B. Employer coverage of clinical preventive services in the United States. American Journal of Health Promotion. 2006; 20:214–222. [PubMed: 16422142]

30. National Institute for Occupational Safety and Health. Atlanta: Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health; 2014. Total Worker Health Initiative.

31. Barbeau E, Roelofs C, Youngstrom R, Sorensen G, Stoddard A, LaMontagne AD. Assessment of occupational safety and health programs in small businesses. Am J Ind Med. 2004; 45:371–379. [PubMed: 15029570]

32. Massachusetts Department of Public Health. [Accessed on November 20, 2014] Working on Wellness. 2008. Available at http://www.mass.gov/eohhs/docs/dph/mass-in-motion/worksite-wellness-toolkit.pdf.

33. U.S. Census Bureau. [Accessed on November 20, 2014] North American Industry Classification System. 2014. Available at http://www.census.gov/eos/www/naics/.

34. Cinite I, Duxbury LE, Higgins C. Measurement of perceived organizational readiness for change in the public sector. British Journal of Management. 2009; 20:265–277.

35. Krieger N, Williams DR, Moss NE. Measuring social class in U.S. public health research: Concepts, methodologies, and guidelines. Ann Rev Pub Health. 1997; 18:341–378. [PubMed: 9143723]

36. University of Miami Occupational Research Group. Surveillance of Morbidity and Mortality in U.S. Workers. 2014 Available at: http://www.umiamiorg.com/#!documentation/c1z9p.

37. Rosner, B. Fundamentals of biostatistics. Boston: Brooks/Cole, Cengage Learning; 2011.

38. Centers for Disease Control and Prevention. [Accessed November 21, 2014] Work@Health Program. 2014. Available at http://www.cdc.gov/workathealth/index.html.

39. Cunningham TR. The light bulb moment: first conversation about TWH™. TWH™ in Action!. 2013 Apr.

40. Partnership for Prevention. Leading by Example: The Value of Worksite Health Promotion to Small- and Medium-Sized Employers. Available at: http://www.prevent.org/data/files/initiatives/lbe_smse_2011_final.pdf.

41. Hymel PA, Loeppke RR, Baase CM, et al. Workplace Health Protection and Promotion: A New Pathway for a Healthier-and Safer-Workforce. J Occup Environ Med. 2011; 53:695–702. [PubMed: 21654443]

42. Manfreda KL, Bosnjak M, Berzelak J, Haas I, Vehovar V. Web surveys vs. other survey modes: A meta-analysis comparing response rates. International Journal of Market Research. 2008; 50:79–104.

43. LaMontagne A, Barbeau E, Youngstrom R, et al. Assessing and intervening on OSH programmes: effectiveness evaluation of the Wellworks-2 intervention in 15 manufacturing worksites. Occupational and Environmental Medicine. 2004; 61:651–660. [PubMed: 15258270]

44. Emmons KM, Weiner B, Fernandez ME, Tu S-P. Systems Antecedents for Dissemination and Implementation A Review and Analysis of Measures. Health Education & Behavior. 2012; 39:87–105. [PubMed: 21724933]

Table 1

Survey questions on occupational safety and health and worksite health promotion programs and policies

Occupational safety and health	Worksite health promotion
Do you have an occupational safety and health program or system?	Do you have a written policy for tobacco that completely prohibits smoking on your worksite's property?
Is your occupational safety and health or system updated on a regular basis?	Do you have a written policy for alcohol, specifically addressing employee use of alcohol at the worksite/on the job
Do you have a written occupational safety and health policy statement?	Do you have a written policy for drugs, specifically addressing employee use of illegal drugs at the worksite/on the job
Does management set safety goals for the worksite on a regular basis?	Do you have a written policy for employee counseling (e.g. for alcohol/drug abuse or for other family issues)
Are managers/supervisors directly accountable for occupational safety and health in their areas?	Do you have a written policy for occupant protection, specifically requiring use of seat belts during business travel in an automobile
Is there a way for employees to report safety hazards, problems, or concerns?	Do you have a written policy for prohibiting firearms at the worksite
Is there feedback to employees who report hazards, problems, concerns?	Do you have a written policy for physical activity, that allows employees to take fitness breaks on the job
Are hourly employees provided with occupational safety and health training or education?	Do you have a written policy for nutrition, that requires healthy food options available at all worksite meetings/functions
Is there a process in place to orient new employees to occupational safety and health, and emergency response procedures?	During the last 12 months, did you offer health Screenings (e.g. blood pressure, cholesterol, diabetes)?
Are supervisors/managers provided with occupational safety and health training or education?	During the last 12 months, did you offer Health Risk Assessment (HRA) – questionnaires about health habits?
	During the last 12 months, did you offer physical activity and/or fitness programs?
	During the last 12 months, did you offer on-site educational programs (e.g. nutrition, tobacco, physical activity, stress reduction)?
	During the last 12 months, did you offer individual coaching/counseling (e.g. weight management, smoking cessation)?
	During the last 12 months, did you offer Employee assistance program (EAP)?
	Does your worksite have a cafeteria?
	Does your worksite label healthy food choices in the cafeteria?
	Does your worksite have vending machines for food/beverages?
	Does your worksite offer special promotions/discounts to encourage healthy food choices in the cafeteria or from vending machines?
	Does your worksite have onsite shower facilities?

Table 2

Descriptive organizational characteristics among smaller organizations participating in a management survey, September 2013–March 2014 (n=117)

Organizational Characteristics	n[†]	%
Number of Employees in Organization		
1 to 111	60	51.7
112 to 750	56	48.3
Industrial sector		
White-Collar Sector	**62**	**53.0**
Educational Services	3	2.6
Finance and Insurance	5	4.3
Information	4	3.4
Professional, Scientific, and Technical Services	24	20.5
Public Administration	5	4.3
Real Estate and Rental and Leasing	1	0.9
Retail Trade	5	4.3
Wholesale Trade	7	6.0
Arts, Entertainment, and Recreation	8	6.8
Service Sector	**21**	**17.9**
Accommodation and Food Services	1	0.9
Administrative and Support and Waste Management	1	0.9
Healthcare and Social Assistance	13	11.1
Other Services	6	5.1
Blue-Collar and Farming Sectors	**34**	**29.1**
Construction	7	6.0
Manufacturing	23	19.7
Transportation and Warehousing	1	0.9
Utilities	2	1.7
Agriculture, Forestry, Fishing, and Hunting	1	0.9
Top leadership supports		
OSH[‡]	94	80.3
WHP[‡]	75	64.1
Capacity for OSH		
Dedicated budget for OSH	41	35.3
Dedicated staff person responsible for OSH	75	64.7
Worksite has OSH committee	73	62.4
Has all three OSH Capacities	26	22.2
Capacity for WHP		
Dedicated budget for worksite wellness	29	24.8

Organizational Characteristics	n[†]	%
Dedicated staff person responsible for wellness	42	36.5
Worksite has worksite wellness committee	35	30.7
Has all three WHP Capacities	18	15.4
Capacity Means	**Mean**	**SD**
OSH	1.62	1.03
WHP	0.91	1.15

[†] Differences from sample n due to item non-response or missing

[‡] OSH = Occupational Safety and Health; WHP = Worksite Health Promotion

Table 3

Occupational safety and health and worksite health promotion programs, policies, and practices among smaller organizations participating in a management survey, September 2013–March 2014 (n=117)

Policies, programs, and practices	n	%
Occupational Safety &Health		
Employees can report safety hazards/problems	116	99.1
Feedback to employees reporting hazards/problems	101	92.7
New Employee OSH‡ orientation	100	85.5
OSH Program present	98	83.8
Hourly employees provided OSH training	97	82.9
Managers held accountable for OSH	91	82.0
Supervisors/Managers provided OSH training	94	81.0
Written OSH Program Policy Statement	91	77.8
OSH Program updated regularly	85	73.9
Management sets safety goals at worksite	72	61.5
Worksite Health Promotion Written Policy		
Drugs prohibited at worksite	115	98.3
Alcohol use prohibited at worksite	112	97.4
Prohibit firearms at worksite	89	76.7
Employee counseling	82	73.2
Tobacco prohibited at worksite	76	65.0
Occupant protection seatbelt use in travel	65	59.6
Physical activity allowed / fitness breaks	23	20.0
Nutrition for healthy food options at company events	16	13.9
Worksite Health Promotion Programming		
Employee Assistant Program	100	86.2
Physical Activity / fitness Programs	51	44.3
On-site educational programs	43	37.1
Health Risk Assessment	37	31.6
Health Screenings	34	29.1
Individual coaching /counseling	29	25.2
Health Promoting Context of Worksite		
Vending machines for food/beverages	95	82.6
Onsite Shower Facilities	40	34.5
Promotions/discounts for healthy food choices	19	16.8
Have Cafeteria	20	17.2
Label Food Choices in Cafeteria	13	12.0
Means	**Mean**	**SD**
Occupational health and safety activities	8.1	0.2

Policies, programs, and practices	n	%
Worksite health promotion activities	9.1	0.3

[‡]OSH = Occupational Safety and Health

Table 4

Implementation of occupational safety and health and worksite health promotion activities by organizational characteristics of smaller organizations participating in a management survey, September 2013–March 2014 (n=117)

Characteristics	Sample Total		Lower OSH Implementation *‡		Higher OSH Implementation *‡		P value
	n†	%	n†	%	n†	%	
TOTAL	**117**	**100.0**	**49**	**41.9**	**68**	**58.1**	
Worksite Size							
111	60	51.7	24	40.0	36	60.0	0.375
112	56	48.3	25	44.6	31	55.4	
Industrial Sector							
White Collar	62	53.0	32	51.6	30	48.4	0.003
Service	21	17.9	11	52.4	10	47.6	
Blue Collar & Farm	34	29.1	6	17.6	28	82.4	
Leadership Support							
Top Leadership support	94	80.3	30	31.9	64	68.1	<0.001
Mean Scoring	Mean	SD	Mean	SD	Mean	SD	
OSH Capacity Factors	1.62	1.03	1.02	1.03	2.04	0.80	<0.001

Characteristics	Sample Total		Lower WHP Implementation *		Higher WHP Implementation *		P value
	n†	%†	n†	%†	n†	%†	
TOTAL	**117**	**100.0**	**71**	**61.2**	**45**	**38.8**	
Worksite Size							
111	60	51.7	38	63.3	22	36.7	0.384
112	56	48.3	33	58.9	23	41.1	
Industrial Sector							
White Collar	62	53.0	33	53.2	29	46.8	0.207
Service	21	17.9	15	71.4	6	28.6	
Blue Collar & Farm	34	29.1	23	67.6	11	32.4	
Leadership Support							

Top Leadership support	75	64.1	39	52.0	36	48.0	0.008
Mean Scoring	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	
WHP Capacity Factors	0.91	1.15	0.35	0.74	1.76	1.14	<0.001

*
Lower OSH implementation = between 0–8 activities
Higher OSH implementation = between 9–10 activities
Lower WHP implementation = between 0–9 activities
Higher WHP implementation = between 10–19 activities

†
Differences from sample n due to item non-response or missing

‡
OSH = Occupational Safety and Health; WHP = Worksite Health Promotion

Table 5

Organizational characteristics associated with Occupational Safety and Health and Worksite Health Promotion implementation: analyses of variance of smaller organizations participating in a management survey, September 2013–March 2014 (n=117)

Characteristic	Mean of Square	F	p value	Partial Eta^2
OSH[†]				
Leadership support	32.62	10.780	0.001	0.088
Capacity factors[*]	48.88	16.153	<0.001	0.302
WHP[†]				
Leadership support	0.17	0.029	0.865	0.000
Capacity factors[*]	102.00	16.917	<0.001	0.312

[*] Capacity factors=number of factors of existence of dedicated staff, committee, budget for OSH and WHP, respectively

[†] OSH = Occupational Safety and Health; WHP = Worksite Health Promotion